WHAT IS CLAIMED IS:

1. An oil pump comprising:

1) a plurality of pump chambers disposed substantially circumferentially and rotatable in accordance with a rotation of a drive shaft, a pump chamber of the plurality of the pump chambers defining a capacity which is substantially sequentially increased in a first certain angle range and substantially sequentially decreased in a second certain angle range, the pump chambers including;

a) a first pump chamber, and

b) a second pump chamber;

2) an intake port so formed as to be open in at least a part of an increase range where the pump chamber moves from a minimum capacity position to a maximum capacity position, the first pump chamber being free from being open to the intake port;

3) a discharge port so formed as to be open in at least a part of a decrease range where the pump chamber moves from the maximum capacity position to the minimum capacity position, in the decrease range the discharge port being biased to the minimum capacity position's side, the second pump chamber being free from being open to the discharge port;

4) a seal land portion disposed in a certain section between:

the maximum capacity position's side of the intake port, and

the maximum capacity position's side of the discharge port,

the seal land portion forming a stationary wall portion striding across the plurality of the pump chambers, the seal land portion sealing a communication between the intake port and the discharge port via the pump chamber;

5) a communication portion for allowing a mutual communication between the first pump chamber and the second pump chamber of the plurality of the pump chambers which face the seal land portion;

6) a reduced portion defined between the communication portion and the pump chamber;

7) a bypass path connecting the communication portion with the discharge port; and

8) a relief valve intervened in the bypass path and being adapted to open the bypass path with a pressure of the communication portion increased to or over a set pressure of the communication portion.

2. The oil pump as claimed in claim 1,

wherein

the relief valve includes:

1) a spool including;

a first end for introducing an oil of the communication portion, a pressure of the thus introduced oil being applied to the first end of the spool, and

a second end to which a certain pressure that is lower than the pressure of the discharge port is applied,

2) a spool receptacle for receiving therein the spool, and defining a circumferential wall,

3) a biasing means for biasing the spool from the second end of the spool to the first end of the spool, and

4) a drain port formed in the circumferential wall of the spool receptacle, and communicating to the discharge port's side, and

wherein

in accordance with the pressure of the communication portion, the spool is adapted to open and close the drain port.

3. The oil pump as claimed in claim 2, wherein

at a maximum speed of the drive shaft, a cavitation occurring in the pump chamber causes a bubble, and

an angle range of the seal land portion is so set that the thus caused bubble is smashed substantially completely on an eve of an opening of the pump chamber to the discharge port.

4. The oil pump as claimed in claim 2,

wherein

the plurality of the pump chambers include:

1) a rotary element varying the capacity of the pump chamber in accordance with the rotation of the drive shaft, and

2) a non-rotary element slidably contacting the rotary element, thereby constituting a common wall portion of the plurality of the pump chambers, and

wherein

each of the intake port, the discharge port, and the communication portion is formed into a slit which is disposed in an inner face of the non-rotary element, the inner face facing the pump chamber's side.

5. The oil pump as claimed in claim 4, wherein

a circumferential width between the intake port and the communication portion and a circumferential width between the communication portion and the discharge port are substantially equal with each other, and

the circumferential width between the intake port and the communication portion is substantially equal to a circumferential width of one of the pump chambers which crosses therebetween, while the circumferential width between the communication portion and the discharge port is substantially equal to a circumferential width of one of the pump chambers which crosses therebetween.

6. The oil pump as claimed in claim 5, wherein

the oil pump is of a trochoid type having an outer tooth of an inner rotor and an inner tooth of an outer rotor, the outer tooth and the inner tooth constituting a trochoid curve.

7. An oil pump comprising:

1) a plurality of pump chambers disposed substantially circumferentially and rotatable in accordance with a rotation of a drive shaft, a pump chamber of the plurality of the pump chambers defining a capacity which is substantially sequentially increased in a first certain angle range and substantially sequentially decreased in a second certain angle range, the pump chambers including;

a) a first pump chamber, and

b) a second pump chamber;

2) an intake port so formed as to be open in at least a part of an increase range where the pump chamber moves from a minimum capacity position to a maximum capacity position, the first pump chamber being free from being open to the intake port;

3) a discharge port so formed as to be open in at least a part of a decrease range where the pump chamber moves from the maximum capacity position to the minimum capacity position, in the decrease range the discharge port being biased to the minimum capacity position's side, the second pump chamber being free from being open to the discharge port;

4) a seal land portion disposed in a certain section between:

the maximum capacity position's side of the intake port, and

the maximum capacity position's side of the discharge port,

the seal land portion forming a stationary wall portion striding across the plurality of the pump chambers, the seal land portion sealing a communication between the intake port and the discharge port via the pump chamber;

5) a communication portion for allowing a mutual communication between the first pump chamber and the second pump chamber of the plurality of the pump chambers which face the seal land portion;

6) a reduced portion defined between the communication portion and the pump chamber;

7) a bypass path connecting the communication portion with the discharge port (11); and

8) a relief valve intervened in the bypass path and being adapted to open the bypass path with a pressure of the communication portion increased to or over a set pressure of the communication portion, the relief valve having a valve-opening pressure for opening the relief valve, the valve-opening pressure being set substantially equal to a pressure of the discharge port.

8. The oil pump as claimed in claim 7,

wherein

the relief valve includes:

1) a spool including;

a first end for introducing an oil of the communication portion, a pressure of the thus introduced oil being applied to the first end of the spool, and

a second end to which a certain pressure that is lower than the pressure of the discharge port is applied,

2) a spool receptacle for receiving therein the spool, and defining a circumferential wall,

3) a biasing means for biasing the spool from the second end of the spool to the first end of the spool, and

4) a drain port formed in the circumferential wall of the spool receptacle, and communicating to the discharge port's side, and

wherein

in accordance with the pressure of the communication portion, the spool is adapted to open and close the drain port.

9. The oil pump as claimed in claim 8, wherein

an atmospheric pressure is applied to the second end of the spool.

10. The oil pump as claimed in claim 9, wherein

an adjustor gear is provided for externally adjusting the valve-opening pressure of the relief valve.

11. The oil pump as claimed in claim 10, wherein

the adjustor gear adjusts an axial position of a holder for holding the biasing means which is a coil spring.

12. The oil pump as claimed in claim 11, wherein

the adjustor gear is constituted of a screw mechanism that is capable of being turned externally.

13. The oil pump as claimed in claim 12,

wherein

the plurality of the pump chambers include:

1) a rotary element varying the capacity of the pump chamber in accordance with the rotation of the drive shaft, and

2) a non-rotary element slidably contacting the rotary element, thereby constituting a common wall portion of the plurality of the pump chambers, and

wherein

each of the intake port, the discharge port, and the communication portion is formed into a slit which is disposed in an inner face of the non-rotary element, the inner face facing pump chamber's side.

14. The oil pump as claimed in claim 13, wherein

a circumferential width between the intake port and the communication portion and a circumferential width between the communication portion and the discharge port are substantially equal with each other, and

the circumferential width between the intake port and the communication portion is substantially equal to a circumferential width of one of the pump chambers which crosses therebetween, while the circumferential width between the communication portion and the discharge port is substantially equal to a circumferential width of one of the pump chambers which crosses therebetween.

15. The oil pump as claimed in claim 14, wherein

the oil pump is of a trochoid type having an outer tooth of an inner rotor and an inner tooth of an outer rotor, the outer tooth and the inner tooth constituting a trochoid curve.

16. An oil pump comprising:

1) a plurality of pump chambers disposed substantially circumferentially and rotatable in accordance with a rotation of a drive shaft, a pump chamber of the plurality of the pump chambers defining a capacity which is substantially sequentially increased in a first certain angle range and substantially sequentially decreased in a second certain angle range, the pump chambers including;

a) a first pump chamber, and

b) a second pump chamber;

2) an intake port so formed as to be open in at least a part of an increase range where the pump chamber moves from a minimum capacity position to a maximum capacity position, the first pump chamber being free from being open to the intake port;

3) a discharge port so formed as to be open in at least a part of a decrease range where the pump chamber moves from the maximum capacity position to the minimum capacity position, in the decrease range the discharge port being biased to the minimum capacity position's side, the second pump chamber being free from being open to the discharge port;

4) a seal land portion disposed in a certain section between:

the maximum capacity position's side of the intake port, and

the maximum capacity position's side of the discharge port,

the seal land portion forming a stationary wall portion striding across the plurality of the pump chambers, the seal land portion sealing a communication between the intake port and the discharge port via the pump chamber;

5) a communication portion for allowing a mutual communication between the first pump chamber and the second pump chamber of the plurality of the pump chambers which face the seal land portion;

6) a reduced portion defined between the communication portion and the pump chamber;

7) a bypass path connecting the communication portion with the discharge port (11);

8) a relief valve intervened in the bypass path and being adapted to open the bypass path with a pressure of the communication portion increased to or over a set pressure of the communication portion; and

9) a narrowed portion fitted on an upstream side of the intake port, so as to cause a cavitation in the pump chamber in accordance with a speed of the drive shaft, the narrowed portion being so set as to form a deviation point in a graph showing the speed of the drive shaft relative to a discharge flow rate.

17. The oil pump as claimed in claim 16, wherein

at a maximum speed of the drive shaft, the cavitation occurring in the pump chamber causes a bubble, and

an angle range of the seal land portion is so set that the thus caused bubble is smashed substantially completely on an eve of an opening of the pump chamber to the discharge port.

18. The oil pump as claimed in claim 17,

wherein

the plurality of the pump chambers include:

1) a rotary element varying the capacity of the pump chamber in accordance with the rotation of the drive shaft, and

2) a non-rotary element slidably contacting the rotary element, thereby constituting a common wall portion of the plurality of the pump chambers, and

wherein

each of the intake port, the discharge port, and the communication portion is formed into a slit which is disposed in an inner face of the non-rotary element, the inner face facing the pump chamber's side.

19. The oil pump as claimed in claim 18, wherein

a circumferential width between the intake port and the communication portion and a circumferential width between the communication portion and the discharge port are substantially equal with each other, and

the circumferential width between the intake port and the communication portion is substantially equal to a circumferential width of one of the pump chambers which crosses therebetween, while the circumferential width between the communication portion and the discharge port is substantially equal to a circumferential width of one of the pump chambers which crosses therebetween.

20. The oil pump as claimed in claim 19, wherein

the oil pump is of a trochoid type having an outer tooth of an inner rotor and an inner tooth of an outer rotor, the outer tooth and the inner tooth constituting a trochoid curve.